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#### PATENT ABSTRACTS OF JAPAN

(11) Publication number: 03176053 A

(43) Date of publication of application: 31 . 07 . 81

(51) Int. CI

A61F 13/15 A61F 5/44

(21) Application number: 01315742

(22) Data of filing: 04 . 12 . 89

(71) Applicant:

ZUIKOU:KK

(72) Inventor:

COPYRIGHT: (C)1891, JPO& Japlo

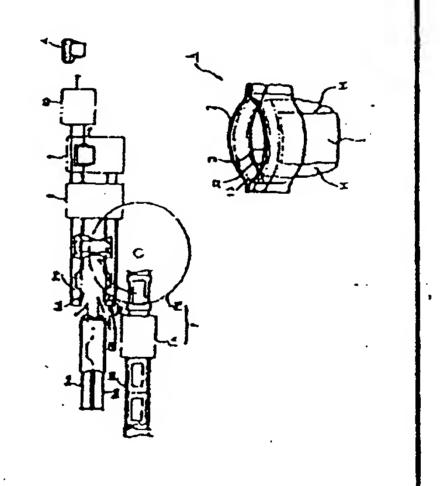
WADA TAKAO

(54) MANUFACTURE OF BRIEFS TYPE DISPOSABLE DIAPER

(ST) Abstract:

PURPOSE: To reduce costs by enabling an automatic large-scale production method by forming a back body wrapping part and front body wrapping sections to place a disper main body thereon orthogonally and to bond it thereto.

CONSTITUTION: Optional stock is selected for a back body wrapping section and front body wrapping sections (2 and 3) Independently of disper body 1. In other words, the disper body 1 is relayed to a tuming transfer device 78 behind a suction conveying device 7A and the disper body 1 is turned by 90 to be supplied to a specified position between belt bodies 2s and 3s of both body wrapping sections perpendicular thereto. Then the disper body is conveyed to a bonding means 8 to both body wrapping sections. Thorusafter, the assembly is conveyed to a folding means 9 to be folded double and side ends of the belt bodies 2s and 2b of both the body wrapping sections are cut while being bonded by a bonding/ cutting means 10.



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### Translation of

Japanese laid open patent application number H3-176053

Japanese Patent Office (J P)

LAID OPEN PATENTS GAZETTE (A)

Laid open patent application number H3-176053 Laid open July 31, 1991

INT. Cl<sup>5</sup> A 61 F 13/15

5/44

Identification code

H

Internal office filing numbers 7603-4 C

6606-3B A 41 B 13/02 S

Examination request

not requested

Number of claims

1

(total of 6 pages [in the Japanese])

Title of the invention Brief-type disposable diaper production method

Patent application number

H1-315742

Application data-

December 4, 1989

Inventor

T. Wada

c/o K.K. Zuiko

15-21 Minami Beppu-cho,

Settou-shi, Osaka-fu-

- 2 -

Applicant

K.K. Zuiko

15-21 Minami Beppu-cho,

Settsu-shi, Osaka-fu

Agent

Patent attorney F. Okumura

#### Specification

#### 1. Title of the invention

Brief-type disposable diaper production method

#### 2. Scope of the patent claim

A brief-type disposable diaper production method involving

- a process whereby a water-absorbent material is inserted between an outer sheet and an inner sheet to form a diaper body; a process whereby a front waistband and a continuous back waistband having an elastic member at least at the side is formed;
- a process whereby the diaper body is overlapped and adhered to both waistbands in the transverse direction;
- a process whereby the diaper body is folded double and both waistbands are brought into contact; and
- a process whereby the contacted waistbands are cut to prescribed dimensions and the regions near the cuts are adhered to integrate the waist parts at the edge portions
- to produce a brief-type disposable diaper from a diaper body and a single waistband.
- 3. Detailed description of the invention

- 3 -

Field of industrial use

The present invention relates to a brief-type disposable diaper production method.

Prior art

Known technology relating to this type of brief-type disposable diaper production method is disclosed in Japanese Unexamined Patent Application Number S57-77304: "Diaper-brief and Production Method Therefor".

Problems to be overcome by the invention

The abovementioned technology is disadvantageous in that as there is a cut-out portion in order to form an opening for the wearer to insert his/her legs, it is necessary to add a process for forming the cut-out portion, which raises production costs.

Means of overcoming the abovementioned problem

The present invention overcomes the abovementioned problem of the prior art and allows the production of brief-type disposable diapers by an automated large-scale production method involving a process whereby a diaper body is formed; a process whereby a back waist part and front waist part are formed; a process whereby the diaper body is overlapped and adhered to both waist parts in the transverse direction; and a process whereby the diaper body is adhered and integrated.

Embodiment .

The present invention is described in detail based on the embodiment shown in the following drawings.

Figures 4 through 6 show an example of a brief-type disposable diaper produced according to the present invention: 1

- 4 -

represents the diaper body, formed by inserting absorbent material 13 between outer sheet (for example, a water-impermeable p.E. sheet) 11 and inner sheet (for example, water permeable nonwoven cloth) 12.

2 is the back waist part and 3 is the front waist part, and the material for both waist parts 2 and 3 may be selected independently from the material for diaper body 1, although in this embodiment, the same material is used; the double layer having P.E. sheets 21 and 31 as the outside and nonwoven cloth 22 and 32 as the inside is formed, an elastic member sheet (for example, a polyurethane sheet) 23 and 33 is inserted into part thereof, so that at least the upper edge is expandable. It should be noted that it is also possible to have a single layer elastic sheet, to form a completely expandable construction. It should be noted that as waist parts 2 and 3 are preferably of an airpermeable material, it is desirable either to take the nonwoven cloth and elastic sheet, and exclude the P.E. sheet, or, when a P.E. sheet is used, to puncture a plurality of small holes therein. It is also possible to totally or partially affix the elastic member (rubber thread, rubber tape or the like) to a sheet of suitable material, to form an elastic sheet.

Moreover, the hole parts H for the insertion of the wearer's legs are dictated by the width and shape of the diaper body 1 and the width and shape of waist parts 2 and 3, and generally, the shape is such that the holes are toward the front side.

The brief-type disposable diaper production method of the

- 5 -

present invention will be described below with reference to Figures 1 through 3.

absorbent body 13 is placed on outer sheet (back sheet) 11 supplied from outer sheet roller 11a, then inner sheet (top sheet) 12, supplied from inner sheet roller 12a, is supplied thereon, to achieve a sandwich-like insertion of absorbent body 1 between outer sheet 11 and inner sheet 12; then this is transported by the first conveyor device 4 to adhering-cutting device 15, and the circumference is firmly adhered by adhering-cutting device 15, or adhered with adhesive, then cut to the required shape. It should be noted that this process is the same as known diaper production processes, and it is possible to employ a conventional production line for disposable diapers.

It should be noted that the adhering-cutting device 15 comprises two stages: first unit 15a and second unit 15b. In first unit 15a, only adhesion and the cutting of cut-away parts P proceeds, to continuously form diaper body 1, then diaper body band 1a is transported to the next process, and may be cut crosswise to the required dimensions by second unit 15b when in the vicinity of the waistbands 2,3-adhesion process.

Moreover, as there are no cut-away parts P when diaper body l is long, it is also possible to achieve the aims of the present invention by only adhering in first unit 15a, then cutting in second unit 15b.

There are various possible shapes for the cut-away parts P, and the shape can be selected according to the shape of the

waistband 2,3 and the desired shape of hole parts H.

elastic member sheet 23a, supplied by elastic member sheet roller 14, is cut along a continuous S-shaped cutting line in the central portion by cutting device 24 to form a pair of bands, back waistband 2a and front waistband 3a.

It should be noted that in the case of the multilayer constructions shown in Figure 3 (outer sheet (P.E. sheet) and elastic member sheet, inner sheet (nonwoven cloth) and elastic member sheet, or outer sheet and elastic member sheet-inner sheet), if elastic member sheet 23a is a band of the same width, and only part of sheet 21a, 22a is adhered, the elastic member sheet can be used effectively without cut-away parts, and holes of the desired shape can be found by selecting a suitable shape for waist part 2,3.

Figure 1(a) and the waistband 2a, 3a process of Figure 1(b), to show the brief-type disposable diaper-forming process: the second conveying device 5a, 5b for waistbands 2a, 3a extends to become the third conveying device 6A and the force conveying device 6B.

Diaper body supply means 7 comprises suction conveying device 7A and rotation conveying device 7B, such that suction conveying device 7A for conveying the diaper body 1 that has been cut to the required dimensions is provided at the end of the first conveying device 4, after which diaper body 1 proceeds onto rotation conveying device 7B, then rotation conveying device 7B rotates the diaper body 1 through 90°, to supply diaper body 1

- 7 -

transversely to a prescribed position on waistband 2a, 3a.

receives the diaper body 1 on the conveying surface of suction conveying device 7A then supplies it by rotating 1/4 of a rotation while suction continues, then rotating the diaper body 1 that is between third conveying device 6A and fourth conveying 6B through 90°, and diaper body supply means 7 can achieve the aim by means of a suitable conveying means as follows: the adsorption surface of the diaper body is rotated through 90° according to the rotation of a suction rotation drum provided so as to be continuous with suction conveying device 7A, then the diaper body proceeds to a suction conveyor belt, whereupon it is conveyed in a transverse direction with respect to the conveying devices, thereby allowing diaper body 1 to be supplied between waistbands 2 and 3.

Diaper body 1 is then conveyed to adhesion means 8 and adhered to waistbands 2a, 3a by a suitable adhesion means such as an adhesive or heat seal.

It is then conveyed to folding means 9, and folded double by said folding means 9 to superimpose front waistband 2a and back waistband 3a.

The sides of the superimposed waistbands 2a and 2b are adhered and cut to the required shape by adhering-cutting means 10, to yield brief-type disposable diaper A.

Advantages of the invention

The present invention yields a brief-type disposable disper by adhering and integrating a pair of waistbands and a

- 8 -

diaper body and cutting to the required dimensions and so conventional diaper production lines can be used for the diaper body, the waist parts are supplied as bands and automated mass production is possible due to a belt conveying device, so the brief-type disposable diapers can be effectively produced at extremely low cost.

# 4. Brief description of the drawings

Figure 1 is an explanatory diagram for the brief-type disposable diaper production method of the present invention: Figure (a) shows the diaper body production process, and Figure (b) shows the waistband-integrating process.

Figure 2 is a diagram of the diaper body, and Figure 3 shows the front waist part and back waist part.

Figure 4 shows an oblique view of a brief-type disposable diaper produced according to the present invention, Figure 5 is plane view and Figure 6 is a cross-sectional view of the diaper body.

- 1 Diaper body
- 2 Back waist part
- Front waist part
- 7 Diaper body supply means
- 8 Adhesion means
- 9 Folding means
- 10 Cutting means

Applicant K.K. Zuiko

Patent attorney

S. Okumura

旬日本四符件厅(JP)

印令斯出班公司

●公開特許公報(A) 平3-176053

@Int.Cl.\*

只别起号

行的证法是

母公開 平成3年(1991)1月31日

A 61 F 13/15

5/44

H 7603-4C

6606 - 38A 41 B 13/02

西菱頭水 来請求 預求項の数 1 (全6 頁)

ブリーフ尼使い捨ておむつの製造方法 日発明の名称

❷等 頻 平1−315742

会出 项 平1(1989)12月4日

母発 明 香 和巴

径 另 大阪府標津市南別府町15畳21号 块式企让灌光内

の出 双 人

床式会让当光 大阪后语海市南别府町15**备21**号

0代 克 人 **并理士 長杆 文选** 

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Ina.

OUXUN

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ーフリングそのススオセンの公田は見がけなずる.

**口充用利用放下べ小五组** 

上北の世史仏仏においては、東海にあたり年刊

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りとにより、40化大変主要者はによりブリーブ

### 沿向手3-176053 (2)

おおいまてもたった立でし、文文技術の上記問題 及を解決するものである。 ○質問問

以下回答にネイ女氏者にもとづいて、本意味を 最中でも。

男々の万里男ののは本文明により当直されたブリーフがないはておりつの一般を示し、しなおひっとのませ、れば本化シートであると、なると、シート」ししたのなシートしました。は はおしませんなんではあるれている。

2 は代番料数の面、3 は何何別回り成であり、 例解性の面で、3 は、3 なつ本体しとは他立して 低点の異代を選択できるが、実質的ではおなつ本 体1 と何風の異好を使用し、れれをむ。と、シー ト2 し・3 し・月間を不成百 2 2・3 2 とでも二 漁用者とし、その一個に異なな料シート(例えば ポリクレナンシート) 2 3・3 3 そ スみ込み、ク なくとも上海のにないては何何である成末とした面の た。2 な、果をがはシートの黒を成れたした面の

親シートミュとの何に扱み込んだは、日本可以は 近ころに何けれる知道れなるによりお話し、何用 可が何をしるによりお話がそれほれ、またな何を 何で見せしておぶむなに可能する。なお、な気の おひつの知道工程と対抗であり、欠点の他い行で おひつの知道工程と対抗であり、欠点の他い行で おひつの知道工程と対抗であり、欠点の他い行で

本別、程書明解教職にある、共にユニットにも のと思えユニットに与ったのでな様式とし、然に ユニットに多るでは何者とともに可能が分下の切 低の人を行なって、歴代なにおむつまなしを形式 して、おなつ本な異ななしゅを以工作に辿り込入 映画であるなど、3との母者工作の近角におい で、別るユニットにあるにより最近方向に附えて 独なに何難してもよい。

また、おりつ事体ものお皮を食力形成とするは NTもと、男在はロシートを無異的に 作は、切職部分をが存在しないので、男もユニッ E じもことなく) 配用がてる、立つ何 トもようでは見着のみを行ない、男をユニット 1 可用収を任益に選択し、何づの別状 うちて何がすることにより目的を選択することが 形式することができて呼ばれてある。 できる。 男もののとはは、ロロのおのつまは

T.C., WRESTPONKU, MARTHUKE

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より様々のものが選択されるものである。 引き回わなは、異単値り無単以称2・3の2 温サインを承し、異性気用シートロール14より

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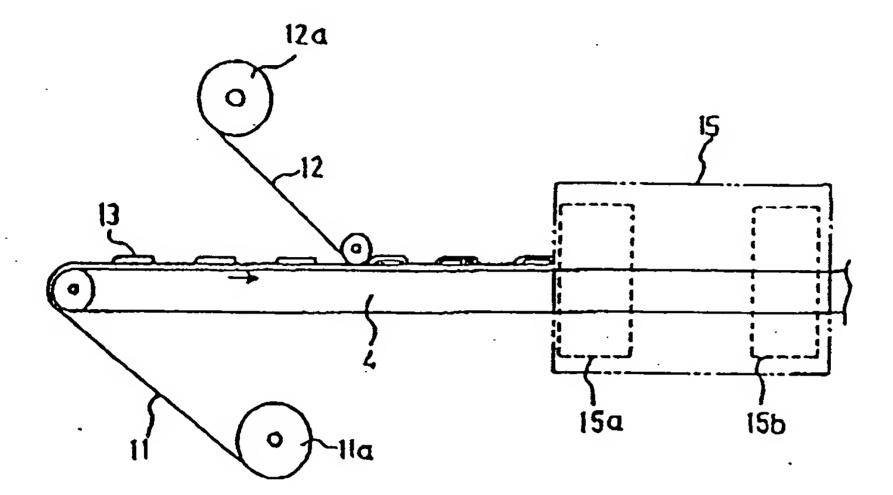
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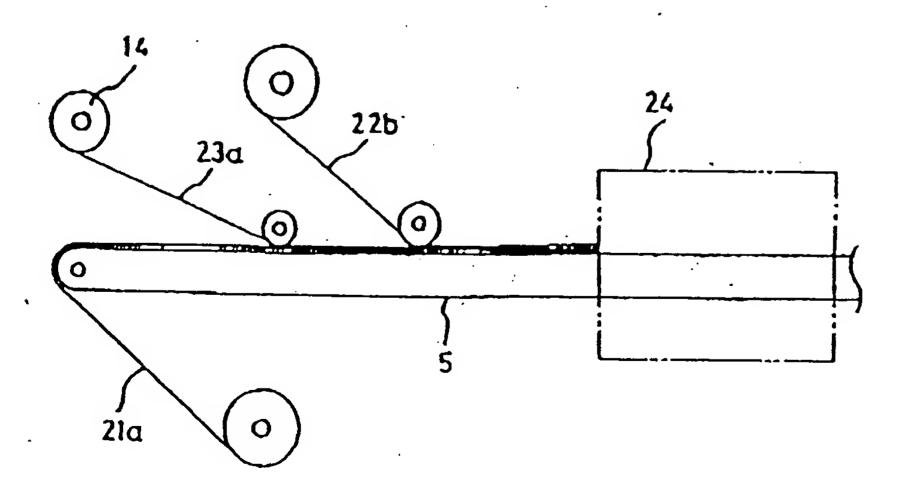
代准人

# 羽偏平3-17G053 (4)

第1図 (a)

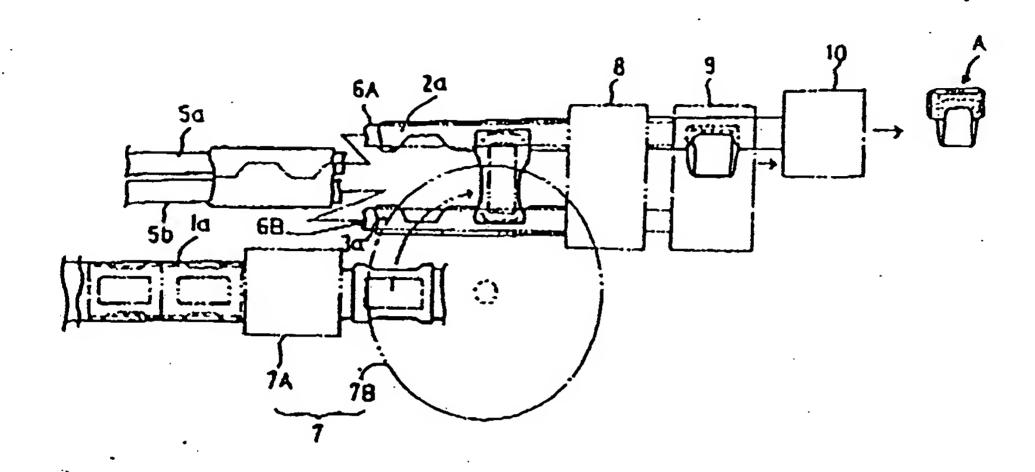


新1図(b)



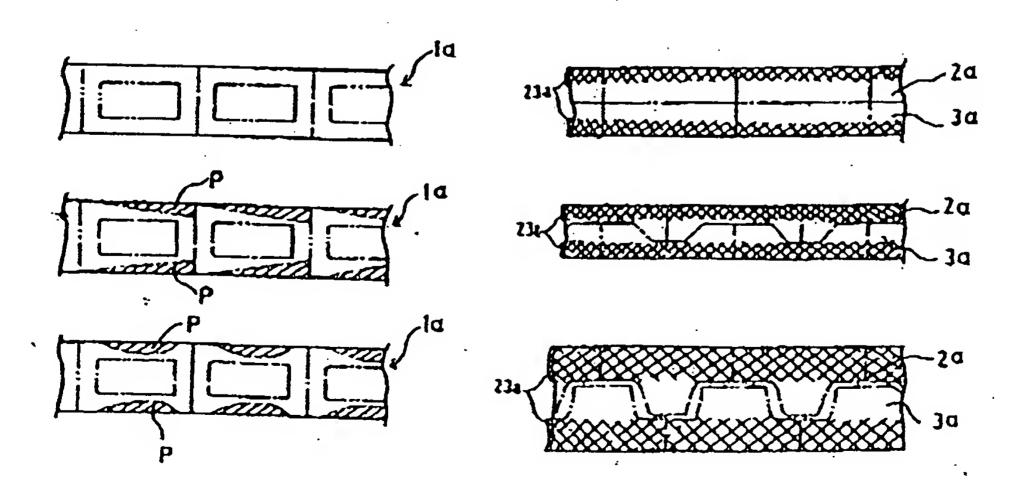
# 共同平3-176053(5)

第1図(C)



第2図

**M**3 ⊠



## 13日年3-176053(6)

第4 図

